Pendidikan dan Karir Ahli Teknologi Pangan

Isi

- Pengantar
- Perjalanan Kurikulum
- Profesi Ahli Teknologi Pangan dan kurikulum yang relevan
- Tantangan ke depan

SDM Unggul

- Cerdik
- Manfaatkan peluang dan kesempatan dengan baik

“Always design a thing by considering it in its next larger context -- a chair in a room, a room in a house, a house in an environment, an environment in a city plan." *Eliel Saarinen, "Time", July 2, 1956* ".

Terminologi

- Kurikulum : seperangkat rencana dan pengaturan mengenai isi dan pelajaran serta cara penyampaian dan penilaiannya (Kepmendiknas 23/U/2000)
- Kompetensi : seperangkat tindakan cerdas, penuh tanggung jawab yang dimiliki seseorang sebagai syarat untuk dianggap mampu oleh masyarakat dalam melaksanakan tugas-tugas di bidang pekerjaan tertentu (Kepmendiknas 045/U/2002)
- Kompetensi Profesional dan Sosial

“Menjadi lembaga pendidikan tinggi terkemuka dengan kualitas internasional, dan sekaligus sebagai penentu kecenderungan, di bidang Ilmu dan Teknologi Pangan".

WE REQUIRE :

PRODUCTION MANAGER

With following qualifications :

1. Male 30 - 40 years old.
2. Graduated from reputable university majoring Food Technology/Food Science with excellent grades. Preferably an overseas graduate.
3. Strong background/experienced as a Production Manager in Food Industry, at least 5 years.
4. Have good management & communication skills, able to lead and motivate people.
5. Have good knowledge in English both oral & written.
6. Computer literate.
7. Hardworking, self-motivated candidate with willingness to learn.

If you are interested and feel that you can fulfil the above requirements, please submit your application in English within 14 days to :

"ABIM" PO BOX 7800 BDSS
BANDUNG 40232

Bakal Bikin 022-4330940

Characteristics of an Excellent Food Technologist

An excellent food technologist has / shows evidence of :

- Providing leadership and vision
- Commitment to ethical and social responsibilities
- Commitment to principles of sustainability
- Management / motivation of people
- Management of projects / events
- Team-working; multidisciplinary / cultural
- Management of self / time
- Communicating, verbal and written
- Learning, developing and improving

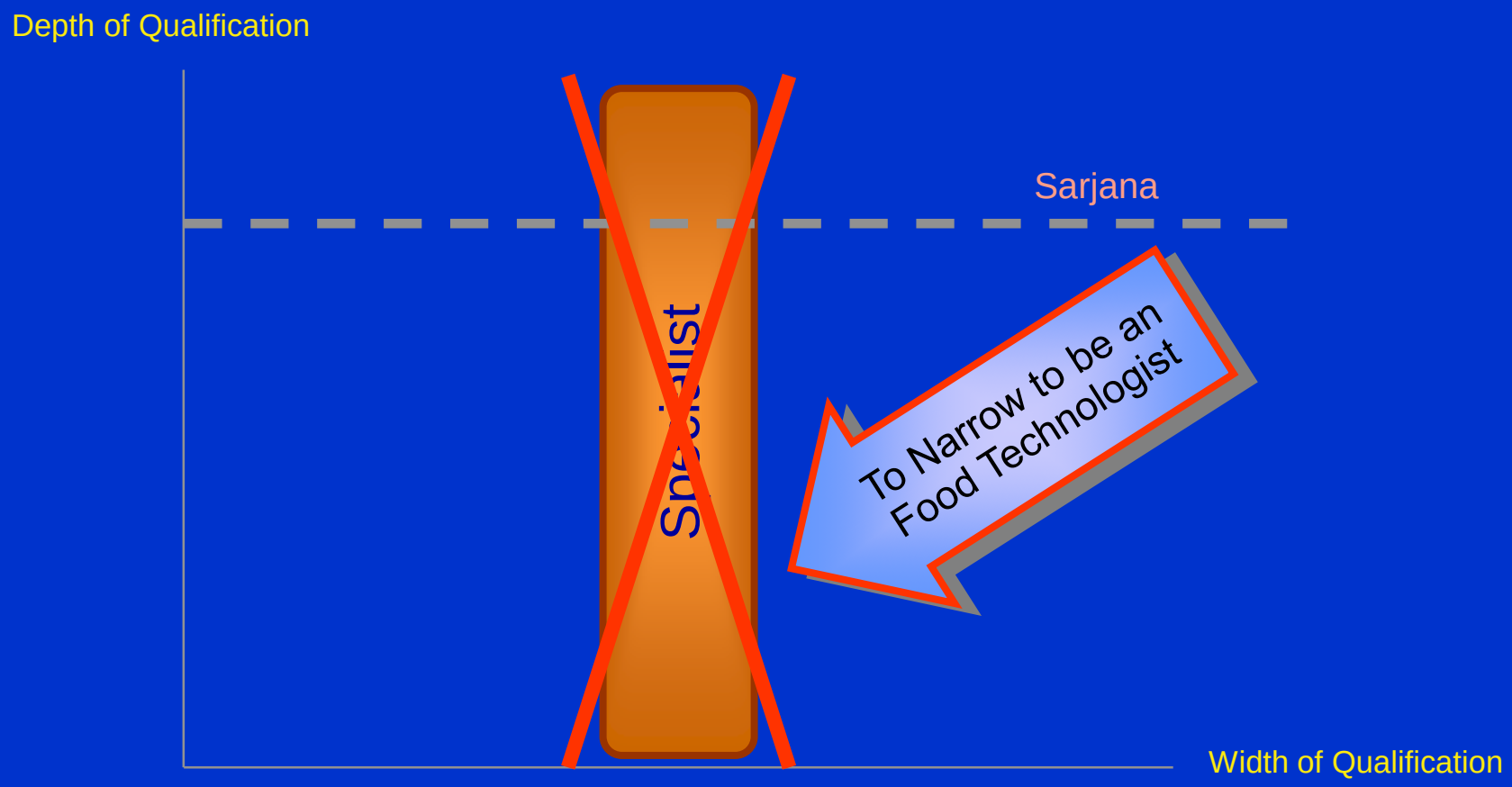
Characteristics of an Excellent Food Technologist

An excellent Food Technologist has / shows evidence of :

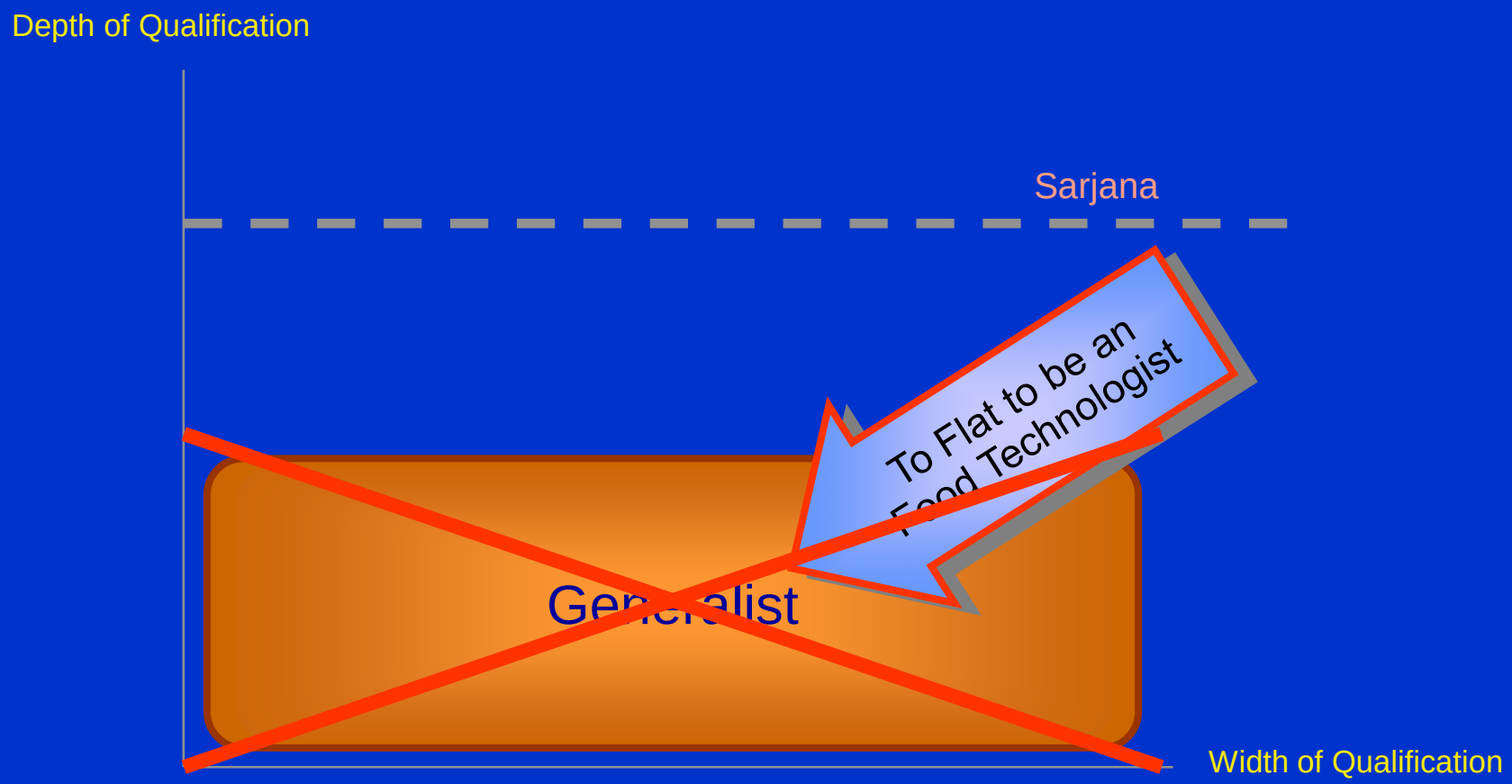
- Management of knowledge / IT
- Flexibility in adapting to change
- Focus on business / clients
- Focus on international opportunities
- Focus on required roles / results
- Systematic and logical approach

- Technical knowledge / expertise
- Commercial / financial knowledge / expertise
- Application of relevant knowledge / expertise

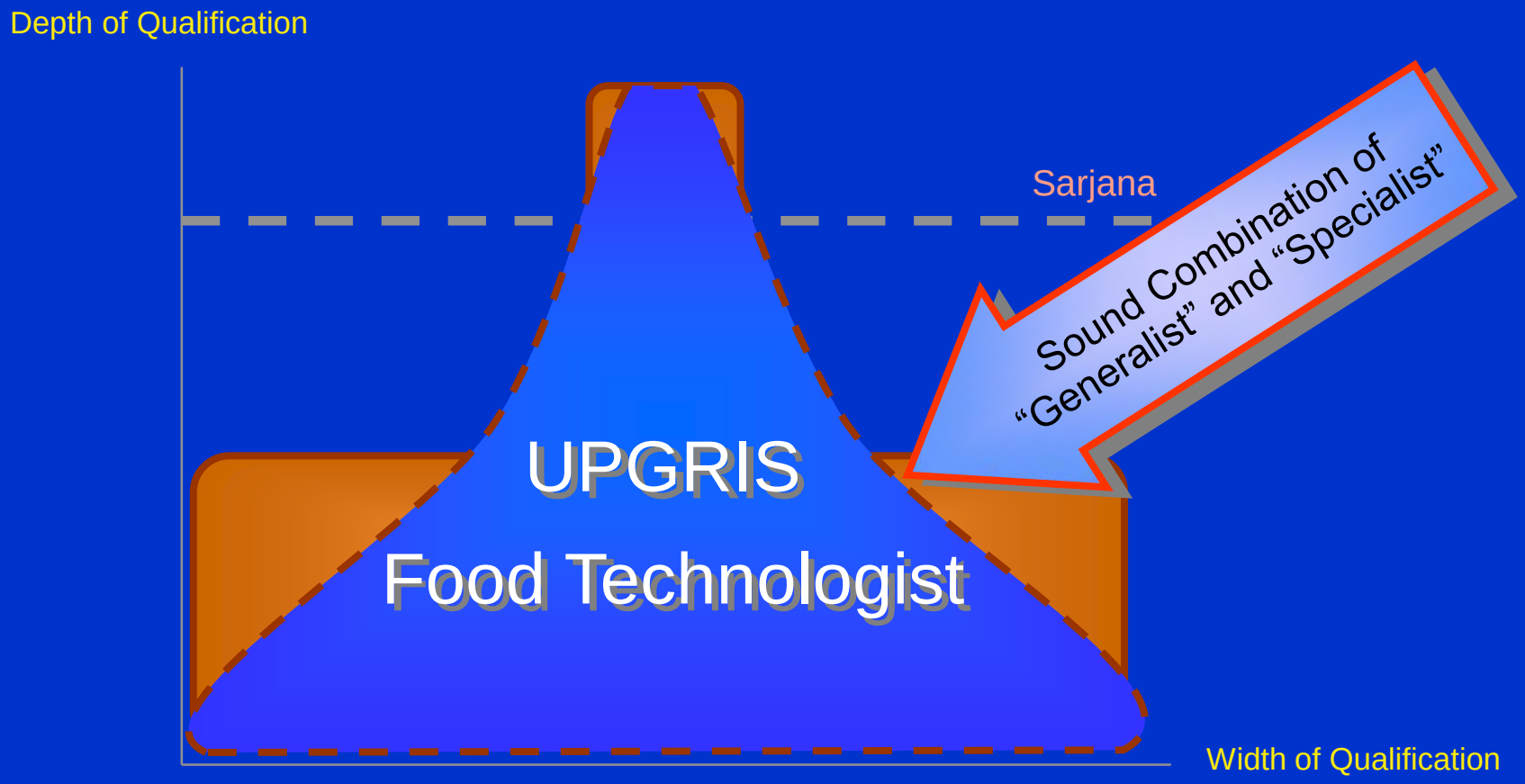
What qualification Industry needs?

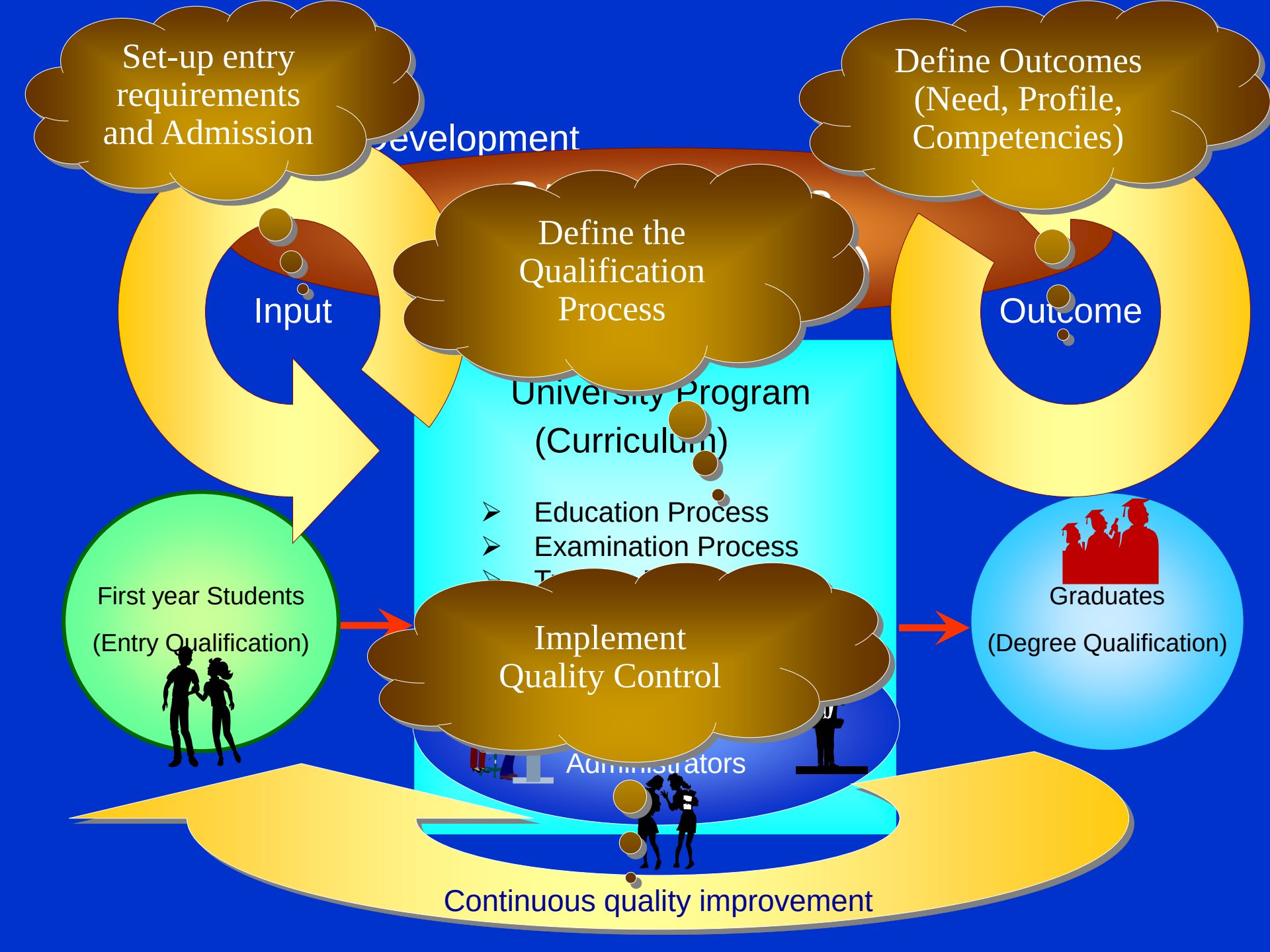


What qualification Industry needs?

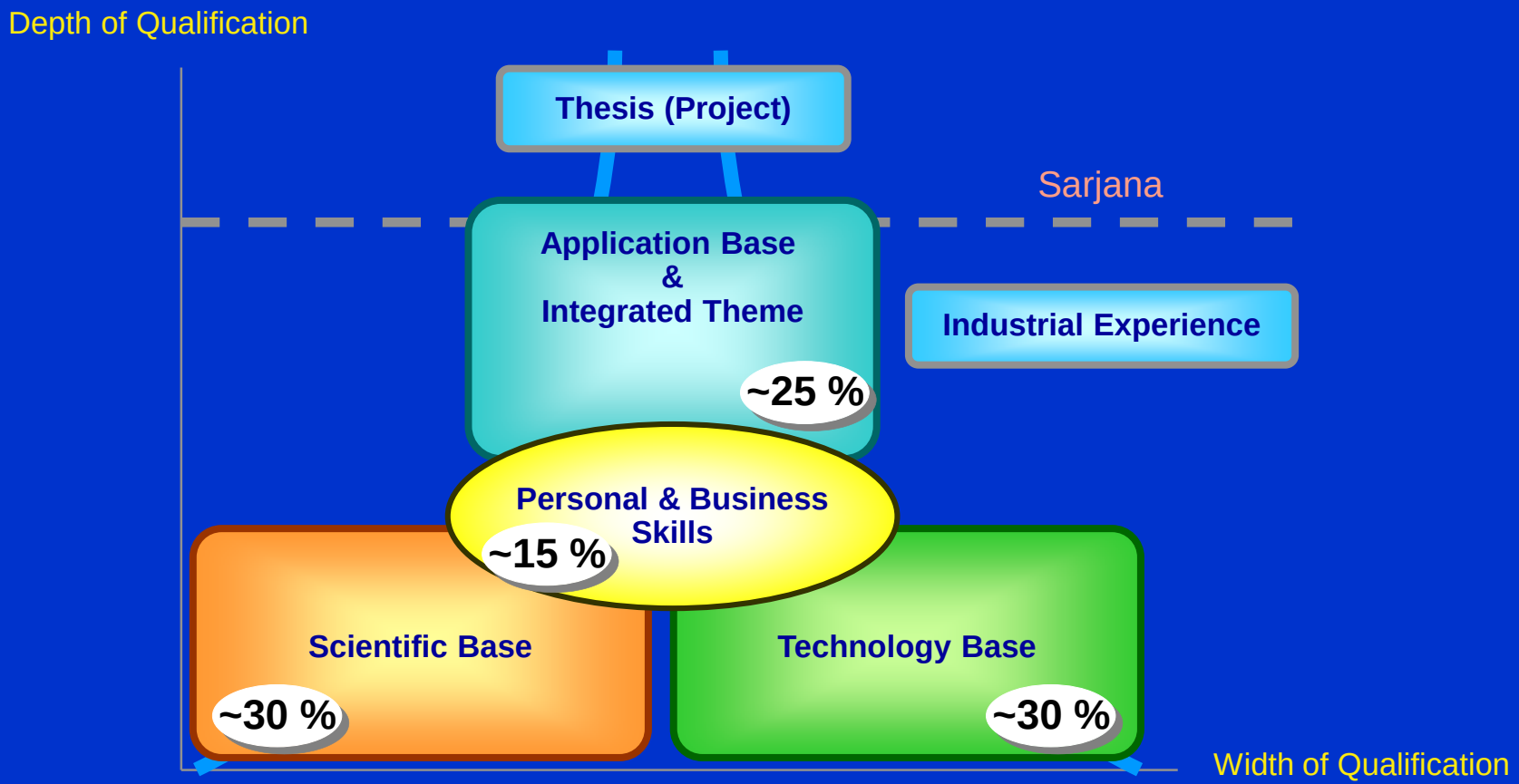


IPB Food Technologist




Set-up entry requirements and Admission
Define Outcomes (Need, Profile, Competencies)
Input
Define the Qualification Process
Outcome
University Program (Curriculum)
Education Process
Examination Process
First year Students
(Entry Qualification)
Implement Quality Control
Graduates
(Degree Qualification)
Administrators
Continuous quality improvement

Impact on Curriculum



SARJANA TP

Kompetensi Normatif :

- berkaitan dengan nilai dan sikap
- dapat menempatkan segala persoalan dalam kerangka nilai **imtaq** kepada Tuhan YME dan nilai **budaya** bangsa

Kompetensi Akademik :

- berkaitan dengan kemampuan metodologis keilmuan
- penguasaan dan pengembangan iptek

Kompetensi Profesional

- berkaitan dengan wawasan
- kemampuan penerapan iptek dan perilaku kerja

Kompetensi Inti Teknologi Pangan

Kompetensi Adaptif

- kemampuan adaptasi thd perubahan
- memahami, mengantisipasi dan mengelola perubahan

Capaian Kompetensi ======➔ Hasil Belajar (Learning Outcomes)

‘Learning outcome’ - the knowledge (facts, concepts, principles) and skills (processes, strategies, methods) to be learned

‘Standard’ - a predetermined criterion of a level of student performance

‘Assessment’ - the process of collecting data/evidence about student learning outcomes

Ranah Hasil Belajar mencapai Kompetensi TP

Kimia dan Analisis Pangan

Mikrobiologi dan Keamanan Pangan

Rekayasa Proses Pangan

Ilmu Pangan Terapan

Kecakapan Hidup

Kimia dan Analisis Pangan

Ranah Hasil Belajar untuk Kompetensi Teknologi Pangan

1. Struktur dan sifat komponen pangan meliputi air, karbohidrat, protein, lipids, dll dan bahan tambahan pangan.
2. Perubahan kimia selama pengolahan, penyimpanan dan pemanfaatan
3. Prinsip, metodologi dan teknik analisis pangan dan food ingredients baik kualitatif, kuantitatif, fisik, kimia dan biologi

Setelah menyelesaikan program mahasiswa mampu …….

Menganalisis kejadian kimia yang mendasari sifat dan reaksi berbagai komponen pangan
Mengetahui cara mengendalikan reaksi-reaksi kimia di dalam bahan pangan Mengerti kaitan reaksi kimia dengan kadaluarsa bahan pangan Menguasai berbagai teknik laboratorium kimia dasar dan kimia pangan
Memahami prinsip teknik-teknik analisis pangan Mampu memilih teknik analisis yang tepat sesuai kebutuhan Menunjukkan kemampuan kerja di laboratorium analisis pangan

Mikrobiologi dan Keamanan Pangan

Ranah Hasil Belajar untuk Kompetensi Teknologi Pangan

1. Mikroba patogen dan pembusuk di bahan pangan
2. Mikroba bermanfaat dalam sistem pangan
3. Pengaruh sistem pangan terhadap pertumbuhan dan daya tahan mikroba
4. Pengendalian Mikroba

Setelah menyelesaikan program mahasiswa mampu …….

Mengidentifikasi mikroba patogen dan pembusuk penting serta kondisi pertumbuhannya Mengidentifikasi kondisi untuk inaktivasi, membunuh atau menjinakkan patogen Melakukan teknik laboratorium untuk mengidentifikasi mikroba bahan pangan
Memahami prinsip-prinsip proses fermentasi
Memahami faktor-faktor lingkungan terhadap pertumbuhan mikroba (mis aw., pH., suhu)
Mengidentifikasi kondisi sanitasi yang baik agar mikroba patogen dan pembusuk inaktif, terbunuh atau terjinakkan

Rekayasa Proses Pangan

Ranah Hasil Belajar untuk Kompetensi Teknologi Pangan

1. Karakteristik Bahan Pangan
2. Prinsip pengawetan pangan, meliputi suhu tinggi dan rendah, aktivitas air dll
3. Prinsip-prinsip keteknikan pangan
4. Prinsip-prinsip Pengolahan Pangan seperti freeze drying, high pressure, aseptic processing, extrusion, dll.
5. Bahan dan Metode Pengemasan
6. Sanitasi dan Higiene
7. Pengelolaan Air dan Limbah

Setelah menyelesaikan program mahasiswa mampu …….

Memahami sumber dan keragaman bahan pangan serta pengaruhnya terhadap pengolahan pangan
Menganalisis mekanisme kerusakan bahan pangan dan merumuskan cara pengendaliannya Memahami prinsip dasar agar produk aman dikonsumsi
Memahami proses transport dan unit operasi di Industri Pangan baik teori maupun praktek Mampu menggunakan kesetimbangan massa dan energi dalam menganalisis pengolahan pangan Mengidentifikasi unit operasi yang tepat dalam menghasilkan suatu produk

Setelah menyelesaikan program mahasiswa mampu …….

Memahami prinsip dan penerapan berbagai teknik pengolahan serta pengaruhnya terhadap kualitas produk
Mengidentifikasi berbagai karakter dan penggunaan bahan pengemas
Menguraikan berbagai prinsip dan penerapan pembersihan dan sanitasi dalam pengolahan pangan
Mengidentifikasi cara pengelolaan air dan limbah yang optimal dalam pengolahan pangan

Ilmu Pangan Terapan

Ranah Hasil Belajar untuk Kompetensi Teknologi Pangan

1. Integrasi dan penerapan prinsip-prinsip ilmu pangan
2. Kemampuan Komputer
3. Kemampuan statistika
4. Jaminan Mutu
5. Penilaian inderawi bahan pangan yang efektif
6. Isu mutakhir dalam Ilmu dan Teknologi Pangan
7. Kebijakan dan Regulasi Pangan

Setelah menyelesaikan program mahasiswa mampu …….

Menerapkan dan menginkorporasikan prinsip-prinsip ilmu pangan dalam konteks permasalahan pangan saat ini
Mengaplikasikan prinsip statistika dalam menyelesaikan permasalahan ilmu dan teknologi pangan
Merumuskan strategi pengendalian dan penjaminan mutu produk pangan berdasarkan prinsip-prinsip ilmu pangan
Menguasi prinsip dasar penilaian inderawi bahan pangan dan uji statistika yang relevan
Menganalisis perkembangan mutakhir dalam kerangka pengembangan industri pangan
Mengaplikasikan pengetahuan komputer untuk menyelesaikan permasalahan dalam ilmu dan teknologi pangan
Menjelaskan peraturan-peraturan dan kebijakan-kebijakan yang berkenaan dengan bahan pangan

Kecakapan Hidup

Ranah Hasil Belajar untuk Kompetensi Teknologi Pangan

1. Kemampuan komunikasi (lisan, tulisan, menyimak dll)
2. Berpikir kritis dan pemecahan problem (kreativitas, common sense, resourcefulness, scientific reasoning, analytical thinking dll)
3. Kemampuan Professionalisme (etika, integritas, penghargaan terhadap kebhinekaan, dll)
4. Kemampuan belajar sepanjang hayat
5. Kemampuan berinteraksi (kerja team, mentoring, leadership, networking, interpersonal skills dll)
6. Kemampuan mengakuisisi berbagai sumber informasi (tertulis, electronic, data bases, internet dll)
7. Kemampuan organisasi (pengelolaan waktu, pengelolaan kegiatan dll)

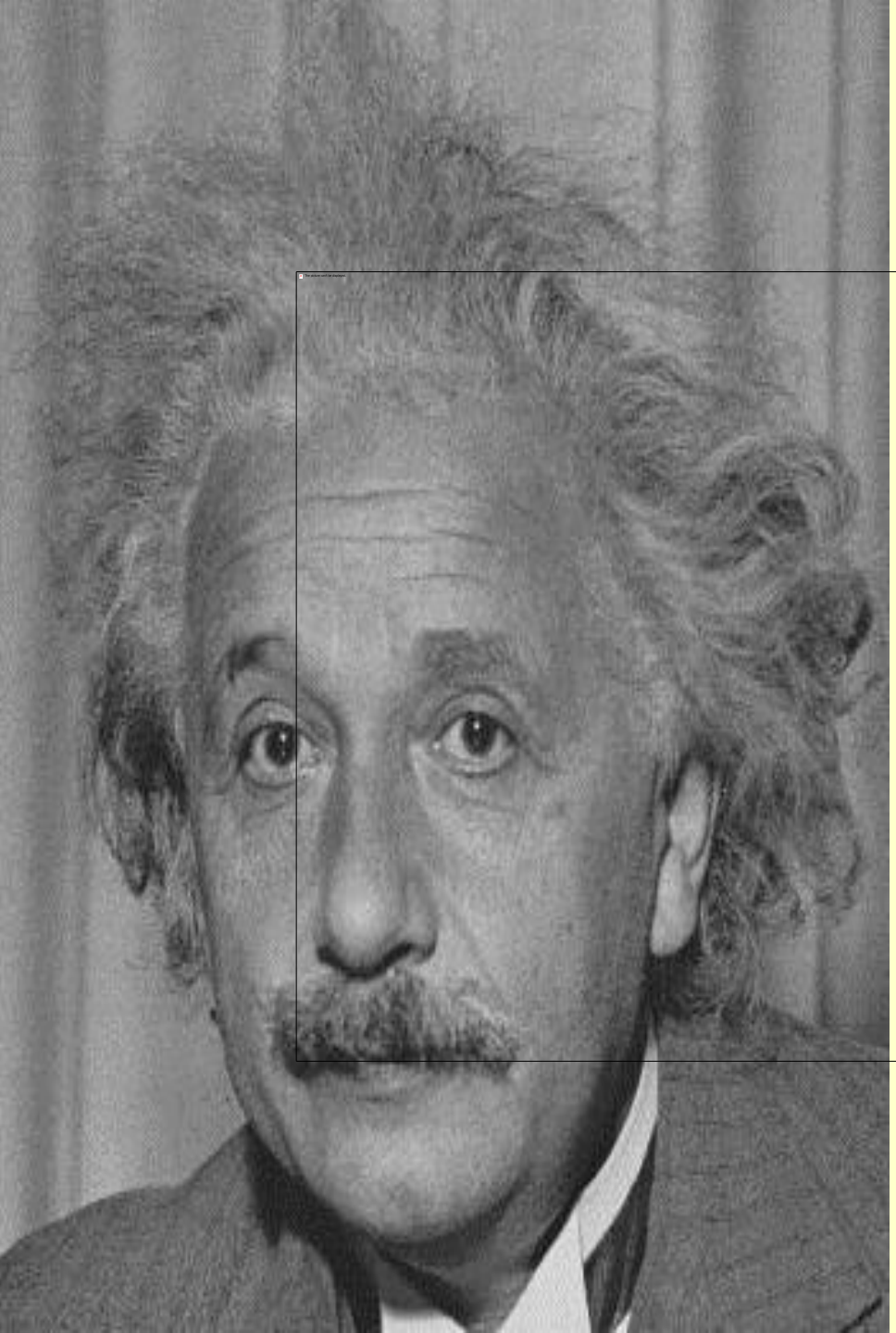
Setelah menyelesaikan program mahasiswa mampu …….

Mendefiniskan masalah, mengidentifikasi akarnya, melihat berbagai alternatif pemecahan dan merekomendasikan strategi pemecahan terbaik Berpikir kritis untuk menyelesaikan permasalahan dan situasi baru
Bekerja dengan individu dengan berbagai latar belakang untuk mencapai hasil maksimal dengan mengedepankan integritas profesional dan nilai-nilai etika
Merumuskan strategi untuk selalu belajar
Bekerja secara efektif dengan orang lain Memimpin dalam berbagai situasi Bernegosiasi dalam setiap konflik
Mencari, merunut, menyarikan informasi dari berbagai sumber dalam rangka pemecahan berbagai masalah secara kritis
Mengelola waktu secara efektif Merumuskan strategi pelaksanaan pekerjaan secara optimal Menangani berbagai kegiatan secara simultan pada berbagai kondisi

Setiap learning outcomes

Diurai menjadi berbagai materi yang kemudian terdistribusi dalam mata kuliah

Lengkap :
www.ipb.ac.id/~tpg/home.php



Bukan cuma materi, tetapi juga cara penyampaiannya, karena …….

Knowledge is experience, everything else is information

Apalagi?

- Dukungan *Hidden Curicullum*
- SOP Pelaksanaan
- Umpan balik dari mahasiswa
- …….

Mitra

- Jenis Bidang studi
  - Teknologi Pangan
  - Teknologi Hasil Pertanian
  - Teknologi Pangan dan Hasil Pertanian
  - Teknik Kimia
  - Kimia / Biologi tergantung posisi di Industri Pangan
- DN dan LN
- Asosiasi Profesi : PATPI dan bidang spesifik lain

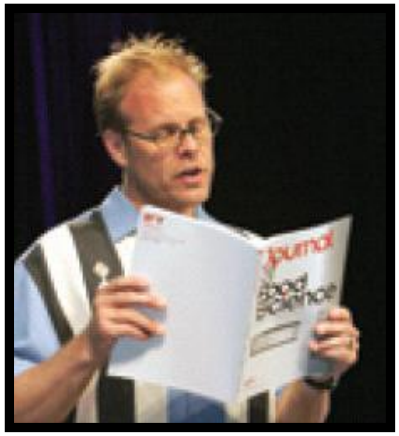
Karir Ahli Teknologi Pangan

Apa yang dikerjakan ahli Teknologi Pangan?

A Food Technologist / Scientist studies the physical, microbiological, and chemical makeup of food. Depending on their area of specialization, Food Scientists may develop ways to process, preserve, package, or store food, according to industry and government specifications and regulations.

Why Food Science?

- It is an applied science : You could see the product you worked on in the grocery store.
- It’s fun! Food scientists get to play with their food!
- It’s exciting! Food scientists never get bored. They work in the lab, in the pilot plant, and travel to different plants sometimes all around the world.



The Food Network’s Alton Brown at IFT’s 2006 Annual Meeting

Who can you work for?

- Food processors
- Ingredient manufacturer / suppliers
- Academia
- Self-employed / Consultant
- Government
- Non-government organizations
- Foodservice
- Testing laboratory


What kind of jobs are available?

- Product Development Scientist
- Processing Engineer
- Microbiologist
- Sensory Scientist
- Culinary Scientist
- Flavor Chemist
- Packaging Engineer
- Basic Research
- Analytical Chemist
- Academia
- Government Official
- Operations
- Logistics
- Supply Chain Management
- Marketing
- Regulatory Affairs
- Legal Affairs
- Government Relations
- Quality Assurance
- Food Safety

Product Development Scientist

- Responsible for product formulations
  - New Product Development
    - Takes a product from concept to formulation
  - Brand Maintenance
    - Creates line extensions (i.e. new flavors)
  - Quality Improvement
    - Makes changes as necessary (i.e. supply chain interruption, consumer complaints)
- Responsibilities :
  - Bench-top development
  - Testing
  - Plant scale-up
  - Commercialization
  - Troubleshooting

Case Study: Juice

To formulate a juice beverage, product development scientists can use a variety of ingredients including: fruit juices, juices from concentrate, and juice flavors

Sensory Scientist

- Evokes, measures, analyzes and interprets those responses to products that are perceived by the senses
  - New Product Development/Brand Maintenance
    - Investigates what consumers like and why
  - Quality Improvement
    - Investigates whether consumers can tell a difference when an ingredient in a product is changed, they may also determine if the change was preferred
  - Basic Research
    - Studies perception and develops and/or improves testing methodologies
- Responsibilities :
  - Experimental design
  - Perform, analyze, and report experimental results
  - Troubleshooting

Case Study : Juice

Sensory Scientists can conduct tests to determine if consumers like pulp in their juice. Red lights are sometimes used to mask visual differences.

Process Engineer

- Develops processing procedures and equipment
  - New Product Development / Brand Maintenance
    - Develops processes and equipment to process new products and flavors
  - Quality Improvements
    - Improves processes and equipment to improve efficiency and quality of products
- Responsibilities:
  - Bench-top / Pilot plant process / equipment development
  - Testing
  - Scale-up / Commercialization
  - Troubleshooting

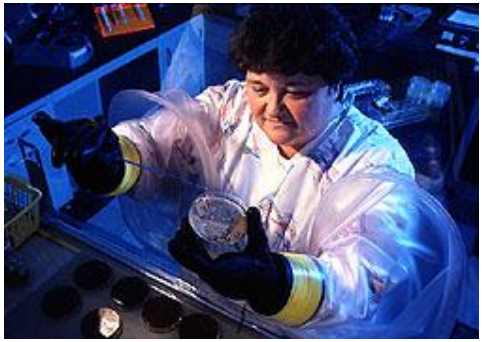
Case Study : Juice

To ensure a juice product has a long shelf life, process engineers determine how long and at what temperature the product should be pasteurized using a HTST (High Temperature Short Time) Pasteurizer

Food Microbiologist

- Contributes to the knowledge about the behavior of microorganisms in food and processing environments
  - New products / Brand maintenance
    - Conducts tests to verify shelf-life of new food products
  - Research
    - Develops new and/or rapid testing methods
    - Studies “good” (those responsible for fermentation) and “bad” (those responsible for food borne illness) bacteria
- Responsibilities
  - Experimental design
  - Perform, analyze, and report experimental results
  - Troubleshooting

Case Study: Juice



Food microbiologists validate the pasteurization of juice to ensure pathogens such as E.coli 0157:H7 will not survive and cause foodborne illness.

Chemist

- Analytical Chemist
  - Analyzes and conducts tests on products and ingredients
  - Determines and sets specifications
- Flavor Chemist
  - Develops flavors for the flavor and food industries and / or investigates the compounds responsible for flavor in food products
- Responsibilities
  - Bench-top / Pilot plant
  - Testing
  - Scale-up
  - Commercialization
  - Troubleshoot
  - Experimental design
  - Perform, analyze, and report experimental results

Case Study: Juice

A chemist from the USDA prepares to analyze limonoids in orange juice. Some limonoids are bitter, and the presence of these limonoids in high concentrations reduces the acceptability of citrus juices to consumers and forces citrus juice producers to lower the bitter limonoid content through juice-blending dilution or the removal of bitter limonoids.

Packaging Engineer

- Develops the packaging for food products
  - New products / Brand maintenance
    - Develops packaging for new and current products
    - Develops new forms of packaging
  - Quality improvements
    - Develops packaging that is easier to use and easier to open
- Responsibilities :
  - Bench-top / Pilot plant process / equipment development
  - Testing
  - Scale-up / Commercialization
  - Troubleshoot

Case Study: Juice

Packaging engineers develop new types of packaging such as the Sensory Straw which has a flat top with four small holes. When a kid takes a sip, the liquid flows in all four directions at the same time!

Consumer Safety Officer

- Responsible for publishing, implementing, and enforcing regulations for government agencies
  - Investigates complaints of injury, illness, or death caused by a regulated product
  - Initiates actions against violators
  - Advises industry, state and local officials and consumers on enforcement policies, methods, and interpretation of regulations
  - Plans and directs regulatory programs
  - Develops inspection procedures and techniques
- Responsibilities :
  - Rulemaking
  - Inspection / Enforcement
  - Troubleshooting

Case Study: Juice

Consumer Safety Officers from the FDA have jurisdiction over the labeling of juice. According to Title 21 Section 102.33 of the Code of Federal Regulations (CFR), beverages that are 100% juice may be called "juice." However, beverages that are diluted to less than 100% juice must have the word "juice" qualified with a term such as "beverage," "drink," or "cocktail."

It takes a lot of work and resources to make a food product!